Recommended Energy Actions

Mayor's Green Ribbon Commission
on Climate Protection

September 22, 2005

Strategy: Become the most energy efficient city in the country

- As measured by: residential per capita energy use (gas and electricity) in similar climates
- Concept: fewer BTUs = fewer GHG emissions
- Note: energy efficiency is not the same as curtailment. Efficiency is *good* for the economy.

Energy efficiency: what's not to like?

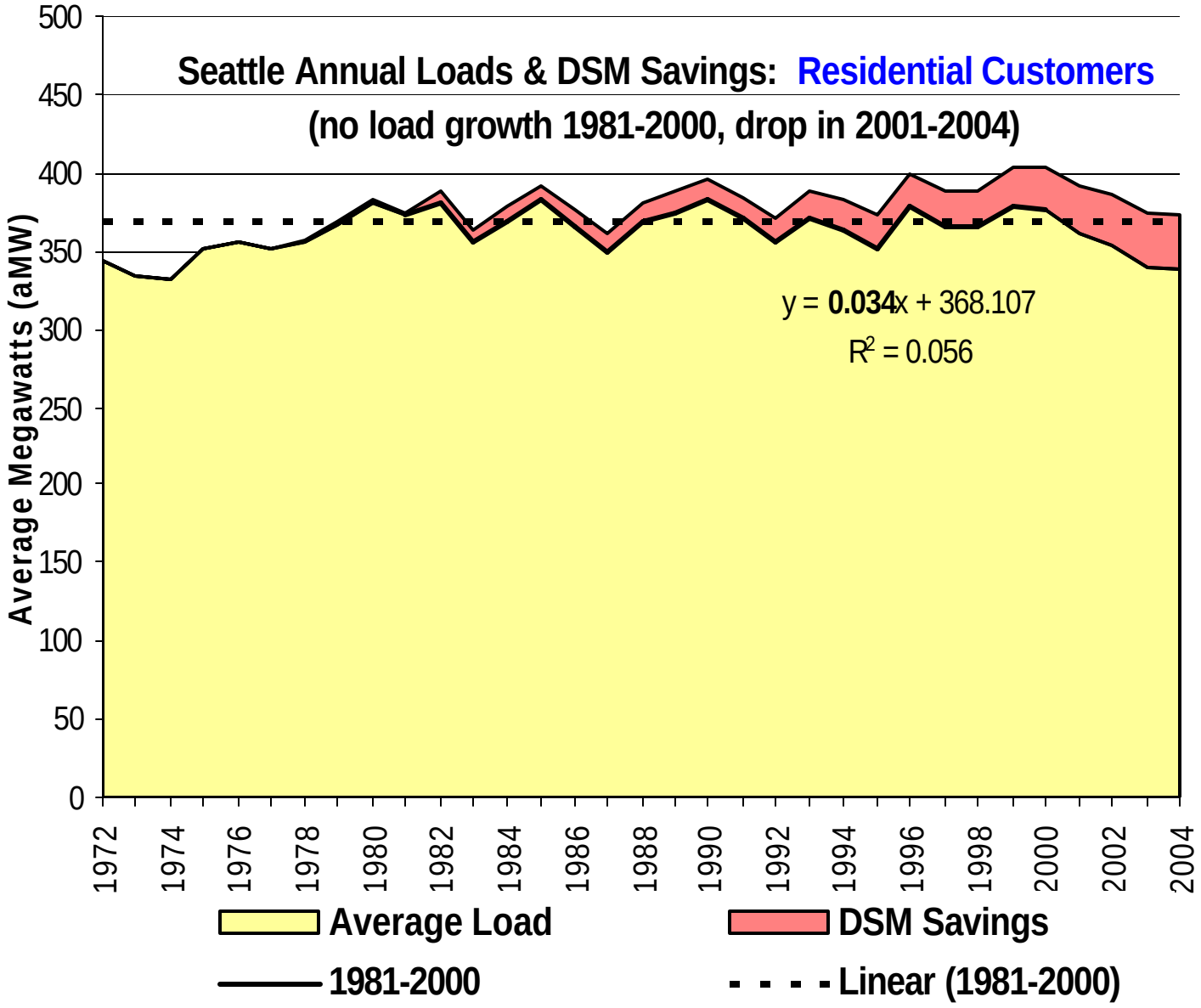
- Proven
- No mitigation, no EIS, no GHG
- Creates jobs
- Keeps local dollars local
- Consumer oriented (i.e., built-in self interest)
- Reliable
- Rates high on cost effectiveness
- Rates high on catalytic potential –
  - Transferable to other jurisdictions
  - Transforms markets

Conservation and City Light

- Commitment to zero net GHG emissions
- Load growth: conservation & renewables
- IRP will define amount and timing for both
- City Light's goal for 2005 is 7.25 aMW; budget is $19.3 million

How does City Light's mitigation policy relate to Kyoto target?

- W/o new conservation, 2012 GHG emissions ~200,000 tons
- However, conservation will continue
- Conservation is an energy resource – but has the effect of reducing GHG footprint.
- Not all emissions can be avoided (e.g., fleet emissions)
- Whatever GHG emissions are left after conservation & renewables, will be mitigated with offsets
  - Conservation avoids about 4774 tons of CO2; costs ~$577/ton
  - Offsets are costing ~ $4/ton


Seattle Annual Loads & DSM Savings: Residential Customers
(no load growth 1981-2000, drop in 2001-2004)
Average Megawatts (aMW)
500
450
400
350
300
250
200
150
100
50
0
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
y = 0.034x + 368.107
R2 = 0.056
Average Load
DSM Savings
1981-2000
Linear (1981-2000)

Recommended actions

- Heat pump hot water heaters
- Internal power supplies
- Intensify participation in PSE gas conservation programs
- Energy code improvements
- City: resource conservation program
- Improve commercial building operations
- Energy efficiency campaign
- SoDo initiative

Heat pump hot water heaters

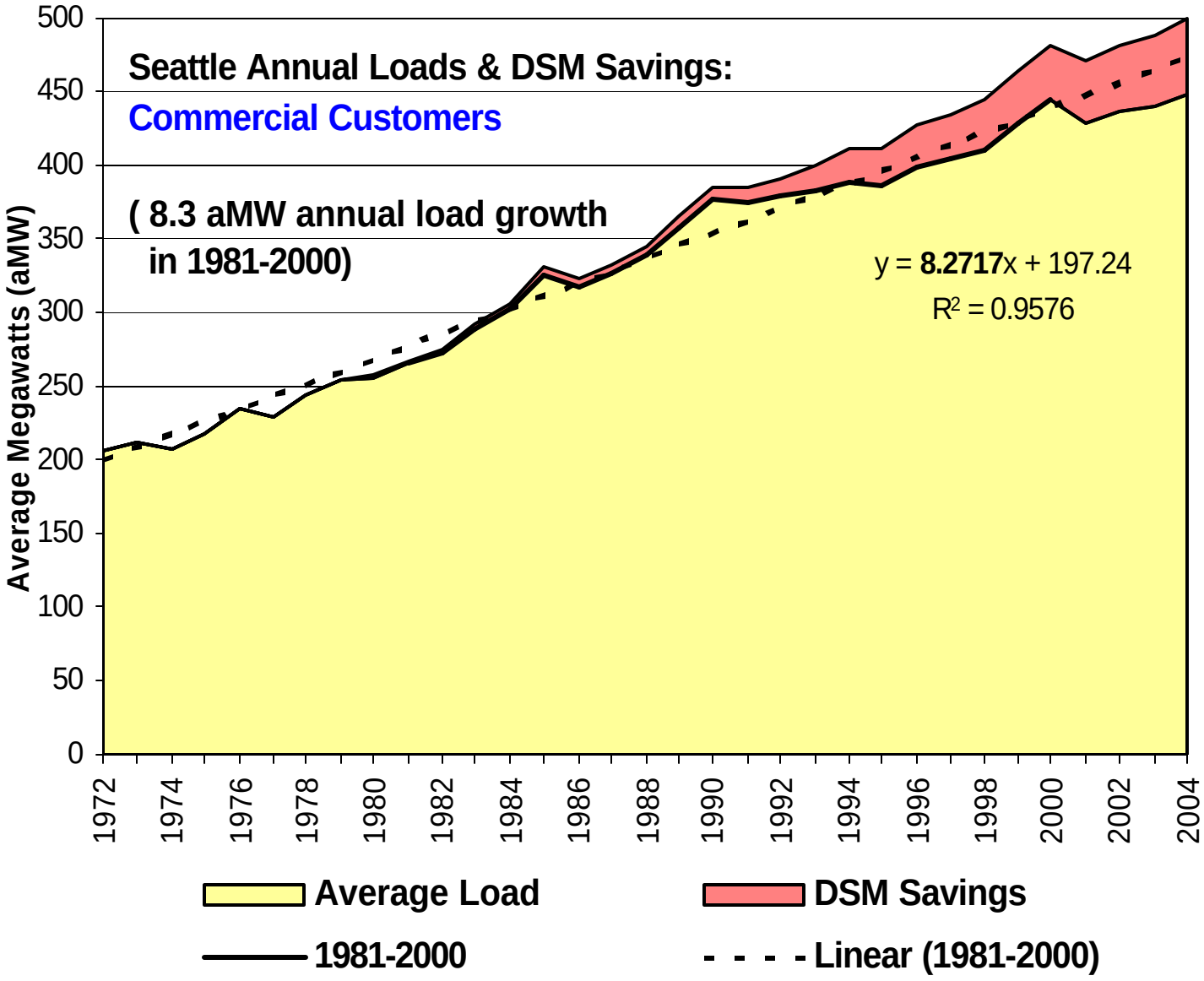
- *Huge potential for energy efficiency gains: uses less than half the energy of existing efficient tanks*
- *Cost and installation issues need to be resolved*
- *Both PSE & City Light are members of the Energy Efficiency Alliance*
- *Target: ready for market by 2010*
- *Bottom line: Seattle leadership for a national or regional research/demonstration program*

Internal power supplies

- *What is a power supply? A circuit that converts AC power to low voltage DC power – needed for electronic products.*
- *More efficient power supplies could save 1% to 2% of all US electricity/yr*
- *Efficiency standards for external power supplies included in 2005 state legislation*
- *Standards for internal power supplies (e.g., PCs) just beginning – 80+ program*
- *Bottom line: Seattle leadership on market transformation could substantially accelerate local and national energy savings*

Improved building operations

- *BOMA/utility partnership to improve commercial building efficiency*
- *Reduce back-up generator testing, re-commission buildings, certify building operators, educate tenants/occupants, feed-back loop to building managers, etc*
- *National study: median commissioning costs of $0.27 per square foot, with whole-building energy savings of 15 percent and a payback time of 0.7 years.*


Seattle Annual Loads & DSM Savings:
Commercial Customers
(8.3 aMW annual load growth
in 1981-2000)
y = 8.2717x + 197.24
R2 = 0.9576
Average Megawatts (aMW)
500
450
400
350
300
250
200
150
100
50
0
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
Average Load
DSM Savings
1981-2000
Linear (1981-2000)

Conservation and PSE

- PSE analysis estimates that achievable conservation potential will yield 32,400 metric tons by 2012 (about 30% of “technical” conservation potential)
- Still experiencing learning curve on gas conservation programs
- Welcomes partnership opportunities to increase customer participation

Conservation: key issues

- Code changes “lock up” energy savings – but even cost effective code changes are contentious
- Lack of program congruity between SCL & PSE inhibits program success
- There remains tremendous conservation potential in all sectors
- Steep natural gas rate increases, media energy headlines, and tax credits all point to a ripe environment for increasing energy efficiency
- Energy cross cutting strategies: RPS, carbon cap on power plants; national cap & trade

Renewable energy resources

Solar

- High installation costs limit near term solar potential; long term, new technology likely to provide increased energy potential at lower costs
- City Light is building institutional capacity and demand – *Green Up* and *Green Power;* SSB 5101

Biomass

- Seattle Steam planning to convert to burning urban wood waste

Solar

- $8,000-$12,000 installed cost/kw
- Maximum 1000 kwh/year production (avg Seattle home uses 10,400 kWh)